

Seasonal Volume Variations and Product Costing

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Introduction

- The Postal Service appreciates this opportunity to discuss how seasonal variations in costs should be, and are, included in the established product cost methodology.
- The Postal Service believes that it is important to study the impact of seasonal volume variations on attributable costs, and does so on an ongoing basis.
- It is also important that such research is comprehensive and consistent with sound costing principles.

Key Points

- Seasonal costs are currently included in the accrued cost base used for calculating product costs.
- Failure to recognize this point caused the UPS proposed method to dramatically overstate “unexplained” costs.
- The operational response to volume peaks determines how seasonal product costs should be calculated.
- The nature of the operational response varies across functions. A single, broad-brush approach to seasonal costing is inappropriate.
- The Postal Service has made progress analyzing seasonal costs and has research in place to continue that analysis.

In these remarks, we will address the three questions raised by the Commission in Order 5586.

- How do the PRC/USPS costing models account for peak-season costs?
- To what extent are seasonal spikes caused by competitive products and how does the PRC/USPS costing methodology account for those spikes?
- How does the established incremental cost methodology account for peak-season costs in general and for (delivery of) competitive products?



Seasonal Volume Peaks

- The Postal Service faces a number of seasonal volume peaks:

Marketing Mail flats peak during the fall mailing season.

Political mail peaks during the campaign season.

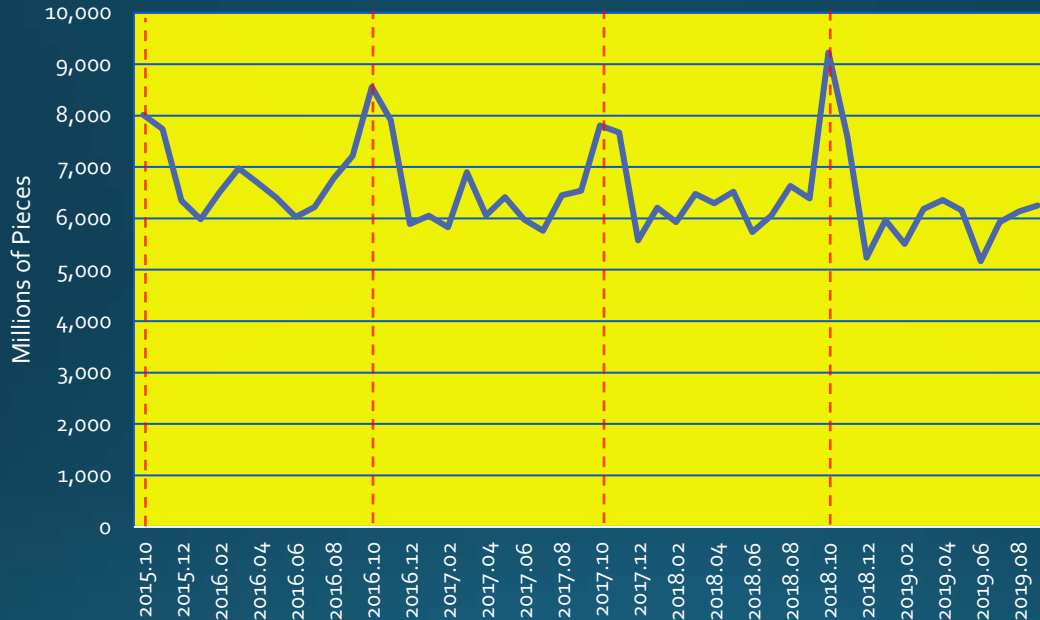
First-Class Mail peaks in December.

Domestic package volume peaks in December.

Inbound International packages peak in December.

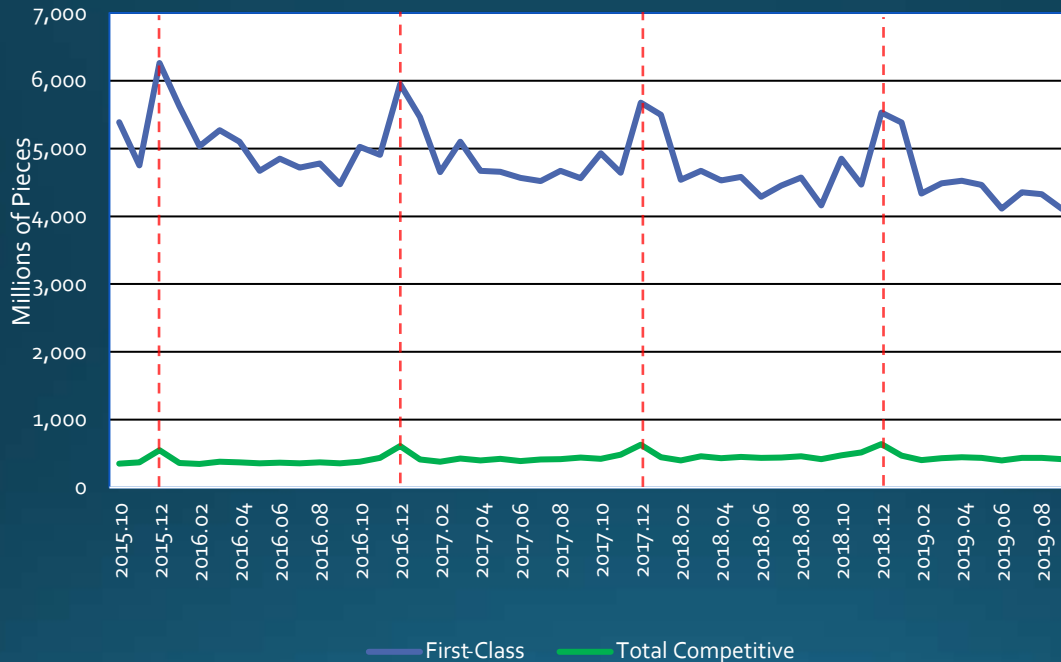
- Monthly volume data can provide insight into the products that cause the seasonal volume peaks.

Marketing Mail Monthly Volume FY 2016 - FY 2019



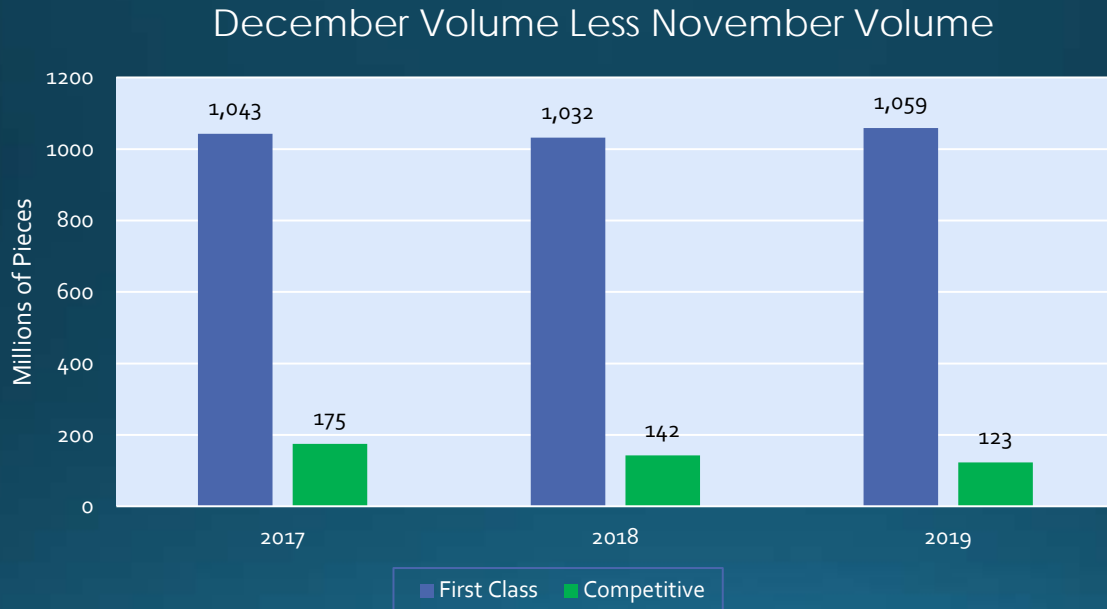
- Marketing mail has a pronounced peak centered on October of each year.

First-Class & Competitive Monthly Volume FY 2016 - FY 2019



- The most famous peak is centered on December and is dominated by the growth in First-Class Mail.

- The volume growth in First-Class Mail is many times larger than the growth in all domestic competitive products combined.



- Competitive volumes are a contributor to seasonal peak costs, but are certainly not the sole cause.

- Index numbers (percentage changes) can provide a misleading sense of relative importance of seasonal volume peaks.

When time series are of disparate size, one can separately relate each one to its own base, translating absolute changes into percentage changes.

But relatively small volumes can have large percentage changes.



FY 2019 peak volume for International was 104 million pieces. First Class volume was 5.5 billion pieces

- For assessing the relative impact of different volumes on Postal Service costs, this approach can be misleading.

Operational Responses to Peak Volumes

- The Postal Service recognizes that seasonal volume fluctuations are normally predictable.
- It starts planning for seasonal peaks months in advance.
- Although weather is not the primary driver of additional cost during the December peak, it is an important contributor to higher operating costs.
- Bad weather makes both transportation and delivery more expensive during the December peak.

The Postal Service has three methods for dealing with peak volumes:



Method 1: Use existing resources and methods more intensively.

Example: Increase capacity utilization on highway transportation.



Method 2: Use additional amounts of existing resources and methods.

Example: Purchase additional air transportation capacity.



Method 3: Use new types of resources and/or methods.

Example: Lease annexes on short-term basis.

The nature of the operational response to the peak volume determines how the resulting costs should be incorporated into product costs.

Use existing resources and methods more intensively.

Established model structure is likely appropriate.

Use additional amounts of existing resources and methods.

Model depends upon the size of the additional resources used.

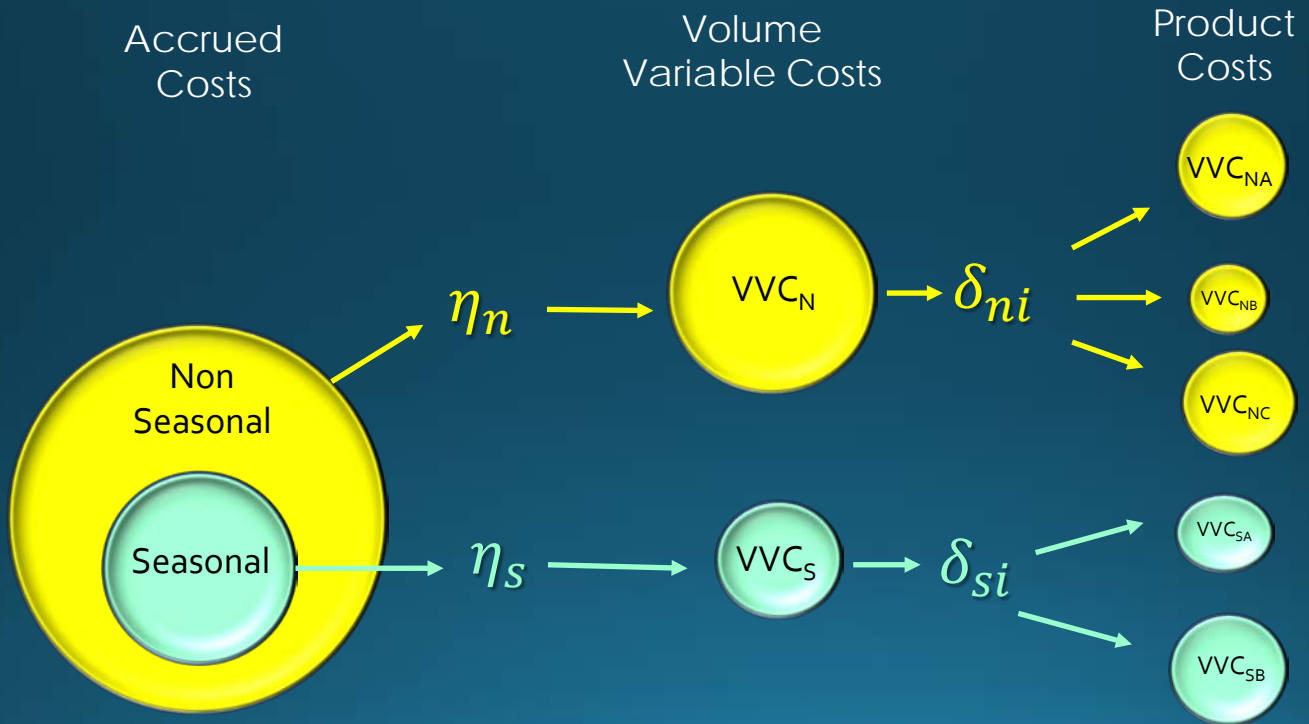
Use new types of resources and/or methods.

Investigation of new model structure required.

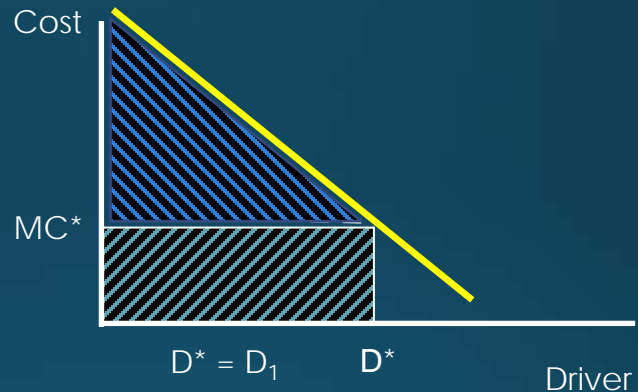
Incorporating Seasonal Costs in the Established Methodology

- Seasonal and non-seasonal costs are parts of overall accrued costs that occur over the course of the year.
- Seasonal costs should be included in product costs in a manner that is consistent with the methods of calculating normal, non-seasonal product costs.
- Seasonal volume variable and incremental costs should be calculated using the well-established methodology for attributing any type of cost to products.

- The variabilities and distribution keys may be different for seasonal costs, but the established volume variable cost methodology is directly applicable.

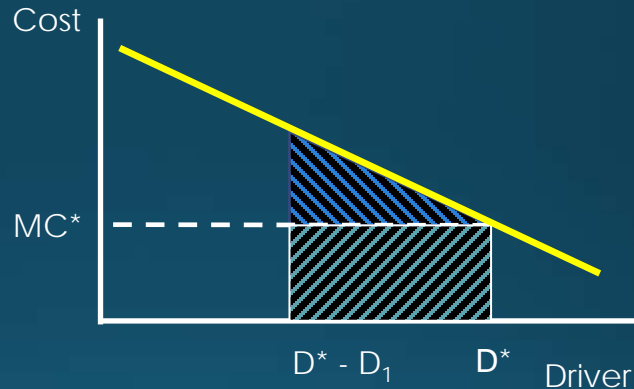


- Calculating seasonal incremental costs requires identifying and measuring the amount of seasonal inframarginal cost caused by each relevant product.
- In the rare instance that a single product (or product group) is handled in a cost pool, all of the inframarginal costs are included in the incremental costs for that product.
- For example, Sunday SPR carriers deliver only competitive products.
- All of the Sunday SPR inframarginal costs are included in the competitive products' incremental cost.



- In the more common case, like December seasonal costs, more than one product causes the costs. Then, each product's inframarginal cost must be separately measured.

- Incremental costs are calculated by measuring how much the component's cost would decline, if the product was removed.



- The established incremental cost methodology thus accounts for peak season costs by including the relevant seasonal volume variable, product specific, and inframarginal costs in each product's incremental cost.

Accurate Seasonal Costs Require Application of an Appropriate Methodology

- The application of *ad hoc* methods to seasonal costs can lead to erroneous cost calculations.
- The types of errors that can arise are demonstrated by the *ad hoc* seasonal cost procedure proposed in the UPS petition.
- The UPS proposal asserts that it has identified large amounts of “unexplained” seasonal costs within the costing models that comprise the established methodology.

- The mathematics of the UPS proposed method show that it forecasts monthly volume variable costs using an average annual cost:

$$\widehat{VVC}_{it} = \sum_{j=1}^n UC_{ij} V_{jt} \quad \text{where: } UC_{ij} = \frac{VVC_{ij}}{\sum_{t=1}^{12} V_{jt}}$$

- The forecast December volume variable cost is subtracted from the December accrued cost, to find the forecast of institutional cost. The difference in the forecast December and November institutional cost is the “unexplained” cost.
- But the UPS proposal fails to reflect that the established methodology accounts for the higher accrued costs during seasonal peaks.

- In the established methodology, the volume variable costs in a component is computed by multiplying the component's variability (ε_i) by its accrued cost (C_i).

$$VVC_i = \varepsilon_i C_i.$$

- The component's accrued cost is just the sum of its 12 monthly accrued costs:

$$C_i = \sum_{t=1}^{12} C_{it}$$

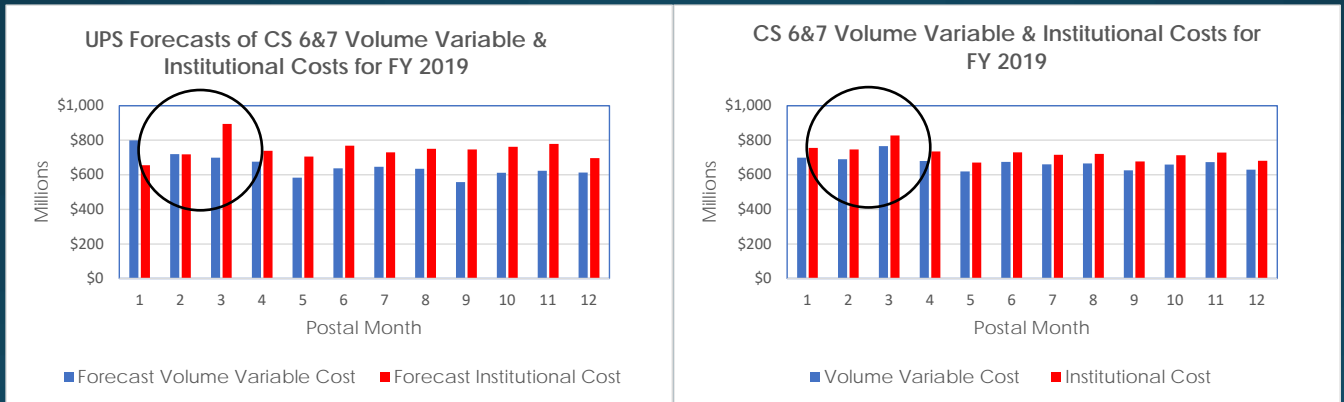
- The component's volume variable cost is just the sum of its 12 monthly volume variable costs:

$$VVC_i = \sum_{t=1}^{12} \varepsilon_i C_{it}$$

- Each month's volume variable cost is the product of the variability and the month's accrued cost:

$$VVC_{it} = \varepsilon_i C_{it}.$$

- In months that accrued costs are higher, volume variable costs are also higher.
- By failing to recognize this fact, the UPS approach understates volume variable costs and overstates institutional costs for the seasonal peak.



- By construction, the UPS method under forecasts the actual change in volume variable costs for the December peak.

UPS Predicted and CRA Based Volume Variable Cost Changes from November to December FY 2019

Cost Segment	Trial Balance Cost Change	UPS Predicted VV Cost Change	CRA Based VV Cost Change
Clerks	\$185,859,827	\$89,461,116	\$152,477,934
City Carriers	\$155,920,327	-\$19,155,491	\$74,897,727
Rural Carriers	\$128,770,154	-\$2,124,613	\$46,200,552
Transportation	\$221,026,059	\$116,506,245	\$174,657,572
Sum	\$691,576,367	\$184,687,257	\$448,233,785

- Despite the fact the variability of clerk time is near 100 percent, the UPS approach predicts less than 50 percent of the actual increase.
- The UPS approach predicts decreases in city and rural carrier volume variable costs for December relative to November.

- Consequently, the UPS approach dramatically overstates the peak change in institutional costs, which it calls “unexplained” costs.





UPS Predicted and CRA Based "Unexplained" Cost Changes for
December FY 2019

Cost Segment	UPS "Unexplained"	CRA Based "Unexplained"
Clerks	\$96,398,711	\$33,381,893
City Carriers	\$175,075,817	\$81,022,600
Rural Carriers	\$130,894,767	\$82,569,601
Transportation	\$104,519,813	\$46,368,487
Sum	\$506,889,108	\$243,342,581

- For these four functions, the UPS method overstates the change in institutional cost by \$263 million which is 108 percent of the actual change.
- The total costs in December 2018, excluding parts of CS 18, were \$6.55 billion. The corrected “unexplained” costs represent just **3.7 percent** of peak season cost.

Investigation of Seasonal Costs

- Some time ago, the Postal Service recognized the importance of studying seasonal costs to make attributable costs as accurate as possible.
- To that end, it initiated a process to study seasonal costs.
- Under that process three studies of seasonal costs have been completed and approved, two more are underway, and others are planned.
- Different functions may have different seasonal responses and deserve individual attention.

- The Postal Service process to identify, study, and attribute seasonal costs has multiple steps:
 -  Gather data to determine the size and nature of any peak activities.
 -  Investigate the operational responses to understand causality.
 -  Determine the need for separate models or parameters.
 -  When necessary, estimate separate variabilities and/or distribution keys.

Status of Studies of Major Functional Areas

City Carrier Costs

Letter Routes: Seasonal Data Collected, Study Underway

Special Purpose Routes: Seasonal Data Collected and Studied, Study Recently Approved by PRC

Rural Carrier Costs

Costs Being Examined, Study Not Yet initiated

Space Provision and Support Costs

Peak Annex Adjustment: Recent Study Separately Identified Peak Annexes and Attributed Costs to Parcels, Study Approved by PRC

Transportation

Air Transportation: Peak Network Costs Separately Identified, 100 Percent Attributed to Products - No Additional Study Necessary

Highway Transportation: Study of Christmas Transportation Costs Near Completion

Mail Processing

Many Seasonal Mail Processing Costs are 100 Percent Attributed To Products - No Additional Study Necessary, Recent Study Incorporates Seasonal Data and Variations

Window Service

Study Not Yet Initiated

Conclusions

- Seasonal costs are an ongoing part of the annual costs attributed to products.
- The Postal Service has been studying, and will continue to study, seasonal costs.
- Accurate attribution of seasonal costs relies upon finding a reliable causal basis and measuring volume variable and incremental costs correctly.
- *Ad hoc* and non-causal methods will lead to erroneous attributable costs.